Assumptions, Inclusions and Exclusions

Cost and Schedule Basis

- Schedule is based on neighborhood prioritization outlined in (Chris Pioli to provide DOCUMENT NAME) dated 11/07/2104.
- Unit rates and productivity based on Program to Date (PTD) information and other criteria outlined throughout this document.
- Multiple schedule calendars to reflect specific needs including:
    - Weather calendar reflecting unusual events
    - Construction Central Business District (CBD) - 5 days (M-F) / 8 hours / single shift (evening) with expected weather days
    - Construction (non CBD) – 5 days (M-F) / 8 hours / single shift (day) with expected weather days
    - Winter shutdown from December 1 – March 31
    - City of Chicago – 12 holidays
    - Professional Services - 5 days (M-F) / 8 hours / single shift (day)
- Headcount for Union Locals 18007 (Gas Workers) and 597 (Pipefitters) will not increase from 2013 levels.
- Not-to-Exceed (NTE) annual capital costs limits provided by Integrys Finance and Accounting.

Assumptions

- No anticipated improvement or degradation in existing City of Chicago (City) support for permits and OUC reviews.
- No significant City ordinance changes impacting delivery cost or schedule.
- Any federal, state and local agencies will provide necessary technical support to meet schedule.
- Inflation is estimated at 1.8%. This is also the discount rate for NPV calculation.
- High Pressure (HP) line improvements in-place to support neighborhood priorities.
- Engineering IDIQ contracts for qualified firms in place for program duration and sufficient to advance program without delay.
- PGL review cycles for deliverables at 5-10 days. These are folded into the “Engineering Design” activities.
- Contractor interest and availability sufficient to support program without delay.
- All installation based on Design / Bid / Build delivery, by neighborhood with multiple phase/packages.
- Productivity and/or cost factored for specific construction complexity of a neighborhood as outlined in Modifiers section.
- Carryover of in-process 2015 neighborhood work into 2016 based on the following 2014/2015 information:
    - Mains / Intersections – 15% of quantity
    - Services – 33% of quantity
    - Meters – 58% of quantities

      Associated permit costs were included.
- Parallel mains (i.e., ‘double decking’) in neighborhoods / areas determined utilizing in-place main to retire. The current ratio for new/retired mains is 1.35:1.00.
- The size of existing main in-place used to determine size of new replacement main.

- The size of new replacement main determined preliminary line-of-lay based on the following criteria:
  - < 6" - 100% parkway
  - 6" – 30% roadway, 70% parkway
  - 8" – 50% roadway, 50% parkway
  - >8" – 100% roadway
- All mains installed utilizing cut and cover methodology. All services installed utilizing directional boring.
- No mains installed in alleys.
- Main and service installations include one temporary and final restoration.
- All live gas work performed by PGL only.
- Any Right of Way (ROW) fees associated with Class 1 rail interface included in rail crossing costs.
- PGL will secure all Right of Entry permits for rail road crossings.
- All deep shoring for rail road crossings will be at 12' except Union Pacific crossings (25'). Other deep shoring requirements based on current GIS information in PGL system.
- IDOT permits at no cost to program.
- Road intersections restoration costs based on 80% full intersections, 20% tee intersections.
- Estimate basis and minimum/maximum considerations include allowances for unknowns within the known scope – productivity and cost issues experienced from time-to-time on the program to-date.
- All piping, valves and other permanent materials associated with the delivery of gas provided by PGL.
- General Conditions are included in the unit rates.
- Any temporary structures, excluding deep shoring, included in the unit rates utilized in the estimate.
- 'In-Service' milestones based on the following:
  - Mains – 2 weeks prior to main installation completion
  - Services – 6 weeks after service installation commences

Exclusions

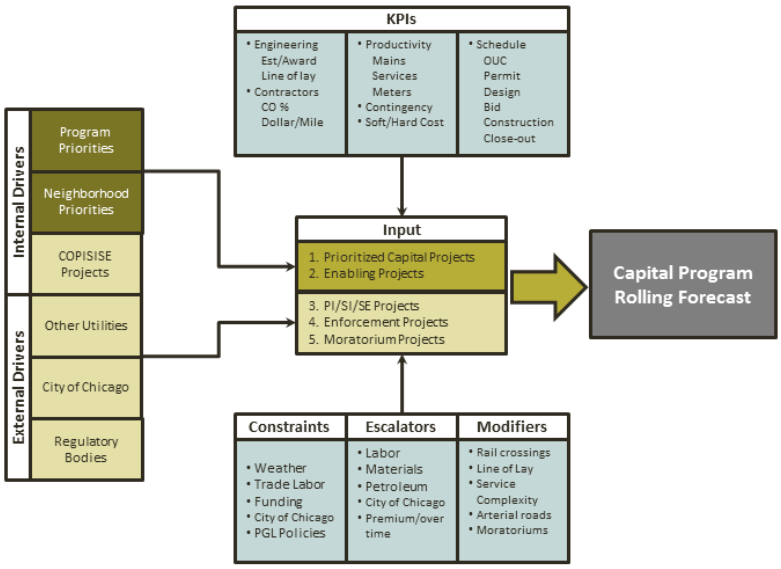
- Specific neighborhood COSIPISE (COrrosion, System Improvement, Public Improvement, System Expansion) projects unless noted otherwise.
- PGL activities after project close-out.
- Cost and schedule for any special permits (EIS, 401/404, water, harbor, etc.,) required to complete the program.
- Environmental design or remediation activities associated with specific projects.
- Cost and schedule for any special right of way agreements other than Class 1 rail.
- Cost for any right of way acquisition.
- Fees and/or Right of Entry approvals associated with work in proximity of CTA
- Any current or future taxes associated with the program including but not limited to material, services or execution.
- Citations, penalties or other similar fines associated with the program.
- Excessive unknown subsurface conditions, significant repairs to utilities damaged during main installation and other similar costs and schedule impacts.

Inclusions

- Annual COPISISE projects included as an annual LOE activity (120 projects / 35 miles).
- Annual O&M included as an annual LOE activity.
- PGL and Program Management Office Soft Costs included as an annual LOE activity.
- Temporary restorations associated with specific events (winter shut down, Chicago Marathon, etc.,).
- Winter shutdown for main and service work from Dec 1 – March 3, including productivity adjustments.

Program Overview

Program Drivers



Internal

Program

The program includes key components addressing Illinois Commerce Commission (ICC) safety related issues. These drivers are:

- Expansion of intra-station pipeline
- Replacement of low-pressure (LP) mains and associated service lines
- Replacement of medium-pressure (MP) cast-iron / ductile-iron mains and associated service lines
- Retirement of MP to LP pressure regulator stations
- Installation of HP to MP pressure regulator stations
- Addition of new City Gate (Gas Measurement and Pressure Regulator) stations

In addition, unrepaired leaks, low pressure ‘islands’, inside meters and damage prevention are also within the parameters of the capital program.

Work within the capital program is executed through a combination of internal PGL resources such as engineering and gas workers (North, Central or South district) as well as outside parties (third party engineering consultants and construction firms).

Neighborhood Priority

Neighborhoods were ranked based on a key several key components, including applicable Distribution Integrity Management Program (DIMP) criteria. The criteria included Ductile Iron (DI) mains, Cast Iron (CI) mains by size and age, unrepaired leaks, inside meters and vulnerable services. These were further adjusted to reflect a balanced workload in the various districts to maximize replacement activities within the existing system.

A map and complete table of neighborhood priorities are included in Appendix A and B respectively. The neighborhoods were further assessed for construction complexity based on the Modifiers outlined later in this report.

COSIPISE Projects

From time to time, PGL may want or be required to relocate gas main facilities due to other infrastructure improvements, such as viaduct lowering, sewer and water improvements, redevelopment, etc. Whenever possible, PGL expects to leverage public improvement projects to:

- Make system improvements.
- Replace mains in advance of moratorium of resurfaced streets.
- Share restoration costs.
- Minimize customer inconvenience.
- Reduce in 3rd party damage to gas mains.

External

Other Utilities

One of the other utilities in the City may initiate their own improvement project which impacts PGL. In such cases, PGL may accelerate or reprioritize specific projects to complete their required work in conjunction with the other utility. This work is typically performed as a Public Improvement (PI) project.

City of Chicago

Like the other utilities, the City may initiate an improvement project such as a resurfacing or system upgrade where it makes sense for PGL to reprioritize or accelerate a portion of their work to support the greater good of minimizing impact on the residence and stakeholders. Additionally, through City requirements, moratoriums on select projects may be in place on roads or hardscapes which have recently been complete

Regulatory Agencies

Various regulatory agencies drive the direction of select aspects of the program based on Federal and State requirements in place governing the efficient, safe and reliable delivery of gas to the public.

Key Performance Indicators

Select Key Performance Indicators (KPIs) driving cost and schedule of the program are incorporated into the rolling forecast. While the KPIs listed are not the completely exhaustive list of dashboard indicators in place to monitor the program, these were incorporated into the forecast. Over time, this list will be refined, with KPIs rolling on and off the list.

Item	Unit	Baseline	Forecasting Factor Range
Project Feasibility / Phasing	SPI	New KPI	0.90 – 1.20
IR average review cycle	Days	30	20-45
3rd Party Engineering Design	CPI / SPI	New KPI	SPI:.90 -1.30 CPI: See Est. Basis
EFP approval average review cycle	SPI	New	20-45
Permit – average cycle	Days	5	5-15 days
Bid to NTP – average cycle	SPI	New	.75 – 1.50
Line of Lay rework (capital projects)	%	10%	10%
Main Installed	miles/wk/crew	.10	See Estimate
Services Installed	services/wk/crew	By Shop	See Est. Basis
Meters Installed	meters/wk/crew	By Shop	See Est. Basis
Restoration (intersections)	inter / wk / crew	.17	.13 -.24
COR / Hard costs	%	15%	By Activity Type
.Soft Cost / Hard Cost	%	15%	15%
Cost / Mile – Main	$ (thru 2013)	$893K	
Cost / Service	$ (thru 2013)	$4,300	
Total Cost / Mile	$ (thru 2013)	$1.3M	

Constraints

Constraints are elements with limitations that will affect the schedule and cost of specific activities and the program as a whole. The following are the major constraints included:

- Weather - Meteorological events (rain, snow, etc.,) that may impact select activities within the schedule. Basis for constraint parameters is the National Weather Service Weather Office historic data for Chicago from 1964-2013[1] The chart below identifies adjustments built into the schedule to account for unusual events:

Probability of Event	Snow			Both	Rain						Snow	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
> Avg	14%	16%	16%	14%	16%	18%	14%	16%	14%	16%	18%	18%
< Avg	16%	18%	10%	18%	20%	18%	14%	10%	4%	12%	24%	18%
Schedule Adjustment Parameters												
Days	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	3	3	3	3	3	2	2	2	2	3	2	3
Min	-3	-4	-2	-4	-3	-2	-2	-1	-1	-2	-3	-3

[1] Data for analysis found at http://www.crh.noaa.gov/lot/?n=ord_rfd_monthly_yearly_normals. Annual snow and rain accumulations were assessed. Unusual event identified as anything outside a standard deviation of the rolling 50 year average.

- Winter Shut Down – A significant portion of work is shut down during the winter season starting in December and going through March.

- Trade Labor – Trade labor availability that may constrain critical program specific activities. Primary focus is on craft availability in Gas Workers Union - Chicago Local 18007 and Pipefitters Union Local

- Funding – Capital Construction Program spending was capped at $275 million annually for balance of program. The discount rate for the program (rate of inflation) is 1.8%.

- City of Chicago Permitting – A number of permits are required for the complete installation and retirement of a section of pipe main. The chart below outlines permit and requirements:

Permit Type	Criteria	Valid for
Main Installation (inc. restoration)	one per block	90 Days
Restoration (sod/asphalt)	one per every 6 blocks	30 Days
Restoration (intersections)	one per 10 handicap corner	30 Days
Retirement – per block	one per every 10 openings (1,500 ft of retired main)	30 Days
Parking	XX	XX
IDOT	XX	XX
Railroad Right of Entry	one per	XX

- Gas Cut-Off policy - Peoples Gas and Light's policy is that no gas disconnects will be performed from November through April.

- Qualified contractors – The number of available local contractors to perform this specialized work is limited.

Escalations

Escalations are changes in the cost of specific goods and services over the life of the program based on industry trends.

- Labor – Gas Workers Union, Chicago Local 18007's current contract[2] was used as a surrogate for all craft labor associated with the Capital Construction Program. Labor was escalated at 3.25% for 2016 and 3.50% for 2017 and 2018. Labor for the balance of the program was escalated at 3.25% and will be adjusted after the 2018 labor agreement is place.

  Professional services (soft costs) were escalated at 3% per annum for the duration of the program.

[2] Contract located on the local's website at www.gasworkers.org.

- Material – Material costs were evaluated based on Engineering News Record (ENR) US Historical Material Price Index from 1983 – 2012[3]. This is a composite of a variety of materials, many of which are not the primary components of the program. Over this 29 year period, material costs increased an average year over year (YoY) by 2.1%.

  The Bureau of Labor Statistics Producer Price Index (BLS PPI)[4] for Ready-Mix Concrete (NASIC 327320) was evaluated from a 25 year period between 1988 and 2013. Over that time, the average YoY increase was 3.0%.

  Asphalt / PE Pipe (Petroleum) - The BLS PPI was evaluated for pricing volatility associated with petroleum based products used in the program. Data for plastic gas pipe and fittings (NASIC 326122) was limited to 2001-2011, with wide YoY swings (-18.5% to +19.0%). Over this short period, the average year over year change was -2.5%. For planning period 2016-2021, no change for PE pipe material will be incorporated into the analysis. Out years will include a 2% increase.

  Asphalt paving material (NASIC 32412) was evaluated from 1988 – 2013. Several YoY spikes occurred in the 25 year evaluation period (19% and 22%). When removed, the average year over year increase averaged 2.9%, versus 4.3% when the aforementioned spikes are included.

  The following weighted material escalation percentages were used.

Material	Percent Split of Material	Escalation	
		2016-2021	2021 - End
PE Pipe	18%	0.0%	2.0%
Asphalt	37%	2.9%	4.3%
Concrete	37%	3.0%	3.0%
Other	8%	2.1%	2.1%
Total (100%)	**100%**	**2.4%**	**3.2%**

  This escalation is consistent with trends outlined in January 2014 Handy Whitman North Central Region update[5].

  Permanent material accounts for 50% of the Total Construction Cost (TCC) of the program, with the balance being labor, equipment and spoils.

- City of Chicago – A number of ordinances increased the overall cost and schedule of the program, including intersection paving, ADA requirements and parking fees. These increases are built into the capital cost budget for the respective project. No other changes are included.

- Premium / Shift differential –Work in the Central Business District (CBD) performed at off-peak hours to minimize impact on businesses and traffic.

[3] On-line resources for ENR located at www.enr.construction.com/economics/
[4] On-line resources for the Bureau of Labor Statistics located at www.bls.gov in the Producer Price Index Industry Data query tool.
[5] Handy Whitman index is a nationally recognized aggregate indicator of regional utility construction costs.

Modifiers

Modifiers are specific characteristics adding to the complexity of a project incorporated that impact the overall cost and schedule.

- Roadway : Parkway Installation (line of lay) – Productivity and cost basis for a neighborhood was adjusted based on the estimated roadway:parkway ratio as compared to the program-to-date baseline information for completed neighborhoods.

- Rail Crossings[6] (number of crossings, volume of traffic) – Significant lead time is required in coordinating with the railroads. These typically require additional right of access, off peak work hours and significant temporary excavation design that increase the cost and duration of these projects.

- Meter and Service Complexity – Productivity adjustment based on the key characteristics of the service / meter installation including:
    - Meter location - inside/outside
    - Meter location inside – basement or other location
    - Finished or unfinished basement
    - Size of meter
    - Single family or multi-family dwelling[7]
    - Age of facility[8]
    - Shut off valve

- Residential / Commercial facilities (percentage)[9] – Higher residential factors increase overall duration due to enhanced coordination and customer non-responsiveness on key activates requiring their authorization / approval. Cost and schedule increased due to multiple mobilization cycles.

- Arterial and Collector roads[10] (percentage) – Arterial and Collector road percentage increases costs and duration due to additional permitting requirements (IDOT) and detailed maintenance of traffic issues, especially for detours.

- Road Moratorium / Total Miles (percentage) – High percentages of moratorium projects require increased Ward coordination with the neighborhood and a premium cost for work prior to moratorium expiration. A moratorium factor of either: (a) current percentage, or; (b) average for City of Chicago (currently 36%) was applied to every neighborhood.

[6] Volume of rail traffic (passenger and freight) found at www.cmap.illinois.gov/documents/
[7] Based on information from the US Census Bureau found at www.factfinder2.census.gov
[8] ibid
[9] ibid
[10] Information on Arterial and Collector roads found at www.gettingaroundillinois.com

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Program Estimate and Cost / Productivity Basis

Program Estimate

Mains + Restoration, No Intersections

Main Installation Pricing - LF of open cut

Category	Install or restore	2" Pipe			4" Pipe			6" Pipe		
		Road	Parkway	Alley	Road	Parkway	Alley	Road	Parkway	6" Alley
Labor/Equip	Install	$17.50	$17.50	$17.50	$20.00	$20.00	$20.00	$29.50	$29.50	$29.50
Sand Backfill and Disposal	Install	$11.50	$17.00	$11.50	$11.50	$17.00	$11.50	$11.50	$17.00	$11.50
Pavement Removal	Restoration	$38.00	$0.00	$38.00	$38.00	$0.00	$38.00	$38.00	$0.00	$38.00
8" Alley Replacement	Restoration	$0.00	$0.00	$244.50	$0.00	$0.00	$244.50	$0.00	$0.00	$244.50
12" Base	Restoration	$61.50	$0.00	$0.00	$61.50	$0.00	$0.00	$61.50	$0.00	$0.00
Grinding & Resurfacing	Restoration	$105.00	$0.00	$0.00	$105.00	$0.00	$0.00	$94.50	$0.00	$0.00
Topsoil	Restoration	$0.00	$6.00	$0.00	$0.00	$6.00	$0.00	$0.00	$6.00	$0.00
Sod	Restoration	$0.00	$5.00	$0.00	$0.00	$5.00	$0.00	$0.00	$5.00	$0.00
Sub Total		$233.50	$45.50	$311.50	$236.00	$48.00	$314.00	$235.00	$57.50	$323.50
Pipe		$14.00	$14.00	$14.00	$14.00	$14.00	$14.00	$14.50	$14.50	$14.50
Total		$247.50	$59.50	$325.50	$250.00	$62.00	$328.00	$249.50	$72.00	$338.00

Main Installation Pricing - LF of open cut

Category	Install or restore	8" Pipe			12" Pipe			>12" Pipe		
		Road	Parkway	Alley	Road	Parkway	Alley	Road	Parkway	6" Alley
Labor/Equip	Install	$40.50	$38.50	$38.50	$54.00	$54.00	$54.00	$69.50	$69.50	$69.50
Sand Backfill and Disposal	Install	$14.50	$17.00	$11.50	$17.00	$25.50	$11.50	$17.00	$25.50	$11.50
Pavement Removal	Restoration	$42.50	$0.00	$38.00	$47.50	$0.00	$38.00	$47.50	$0.00	$38.00
8" Alley Replacement	Restoration	$0.00	$0.00	$244.50	$0.00	$0.00	$244.50	$0.00	$0.00	$244.50
12" Base	Restoration	$69.00	$0.00	$0.00	$76.50	$0.00	$0.00	$76.50	$0.00	$0.00
Grinding & Resurfacing	Restoration	$97.50	$0.00	$0.00	$90.00	$0.00	$0.00	$90.00	$0.00	$0.00
Topsoil	Restoration	$0.00	$6.00	$0.00	$0.00	$8.00	$0.00	$0.00	$8.00	$0.00
Sod	Restoration	$0.00	$5.00	$0.00	$0.00	$6.50	$0.00	$0.00	$6.50	$0.00
Sub Total		$264.00	$66.50	$332.50	$285.00	$94.00	$348.00	$300.50	$109.50	$363.50
Pipe		$15.50	$15.50	$15.50	$17.00	$17.00	$17.00	$18.00	$18.00	$18.00
Total		$279.50	$82.00	$348.00	$302.00	$111.00	$365.00	$318.50	$127.50	$381.50

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Services + Restoration

Category	Install or restore	Service Install - Per LF 5/8" - 1 1/4" Pipe		
		Direct Bore	Insert	Open Cut*
Labor/Equip	Install	$26.50		$17.50
Sand Backfill and Disposal	Restoration	$14.50		$56.50
Sidewalk	Restoration	$3.00		$17.00
Top Soil	Restoration	$1.00		$2.00
Sod	Restoration	$0.50		$2.00
Post Install Insp.	Install	$5.50		$5.00
Sub Total		$51.00		$100.00
Pipe		$14.00		$14.00
Total		$65.00		$114.00

**use sidewalk rates*

Intersection Restoration

Category / Unit	Install or restore	Service Install - Per LF					
		Full Intersection			Tee Intersection		
		Qty	Price	Total	Qty	Price	Total
Labor/Equip (sf)	Restoration	3,448	$4.50	$15,516	2,780	$4.50	$12,510
Pavement Removal (sf)	Restoration	3,448	$2.50	$8,620	2,780	$2.50	$6,950
Grind / Resurface (sf)	Restoration	3,448	$0.50	$1,724	2,780	$0.50	$1,390
Handicap Ramps (ea)	Restoration	8	$8,500	$68,000	6	$8,500	$51,000
Total			$7.50	$93,860		$7.50	$71,850

Permits

Permit	Annual Escalation	Per opening	Asphalt Restoration Fee	Moratorium Degradation Costs*		
				Permit	0-2	2-5
Street / Alley	5%	$432	Applicant must restore	$864	$5,000	$2,500
Sidewalk	5%	$432	No Charge	$864	$5,000	$2,500
Parkway	5%	$215	No Charge	$430	$5,000	$2,500
ADA ramp	5%	$432	No Charge	$864	$5,000	$2,500

**depends on formula*

High Pressure Piping

Item	Unit	Cost	Basis
HP Piping	Mile	$6,500,000	Calculated to support $6M-$7M/Mile TIC
Vault	Ea	$295,000	Per Testimony estimate (based on PTD)
Gate Station	Ea	$5,000,000	Per Testimony estimate (based on PTD)

Cost/Productivity Basis

Engineering

No base case

Install Miles	PGL Review / submittal*	Productivity (miles / week)		
		Low	Base	High
< 2	5 wks	0.50	0.50	0.60
2 - 5	5 wks	0.50	0.75	0.85
5 - 8	5 wks	0.75	1.00	1.10
> 8	5 wks	1.00	1.25	1.35

** ~1 week / submittal / group, though some reviews periods are sequential*

Source: Engineering Schedule

No Base case

As a percentage of Construction Cost

Install Miles	Cost Parameters*		
	Low	Estimate	High
< 2	7.6%	8.0%	8.8%
2 - 5	5.2%	5.5%	6.1%
5 - 8	4.3%	4.5%	5.0%
> 8	3.8%	4.0%	4.4%

**as percentage of mains and service construction cost*

Permits

No base case

Location	Productivity		
	Low	Base	High
Street / Alley	1.00	1.00	3.00
Sidewalk	1.00	1.00	2.00
Parkway	1.00	1.00	2.00
ADA ramp Installation	1.00	1.00	2.00

Street requires two submittals. Low factor assumes inconsistent release of permits by City.

ADA permits = (intersection x 4 adas)/10 adas per permit

Source: PGL Permit Coordinator

No changes in permit costs

Cost Parameters		
Low	Estimate	High
100%	100%	130%

10% of permits need extensions / re-application

Parking and other misc requirements included

Mains + Final Restoration - No Intersections

Base Case - 2012-2014 Historic Information

Main Location		Productivity (mile / week)		
Road (MBR)	Parkway (MBP)	Low (PBL)	Base (PBB)	High (PBH)
35.6%	64.4%	0.75	1.00	1.27

Criteria for specific neighborhood productivity

where: Main Location - Neighborhood Road = MNR
Productivity - Neighborhood Base = PNB
Productivity - Neighborhood High = PNH
Productivity - Neighborhood Low = PNL

PNB =	(MBR / MNR)*PBB	Capped at .125	1.15
PNH =	PNB * (PBH / PBB)	Capped at .139	1.30
PNL =	PNB * (PBL / PBB)	Not less than .068	

Source: PGL FMDR Database

Productivity drops .01 (base, high) for every neighborhood if the number of neighborhoods exceeds 10 in any given year. Low factor remains unchanged

Base Case - 2008 Historic Information from original model

Cost Parameters		
Low	Estimate	High
95.0%	100.0%	120.0%

Source: Original 5 Yr Plan Main Estimating sheet

Cost Parameters increase 1% (estimate ,high) for every neighborhood above 10 if the number of neighborhoods exceeds 10 in any given year.

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Services + Final Restoration

Base Case - 2012-2014 Historic Information

Shop	Productivity (services / week)		
	Low	Base	High
North	28.00	37.00	40.00
Central	24.00	32.00	35.00
South	30.00	40.00	44.00

Source: 2014 YTD Actuals

Productivity drops .01 (base, high) for every neighborhood if the number of neighborhoods exceeds 10 in any given year. Low factor remains unchanged

Base Case - 2008 Historic Information from original model

Cost Parameters		
Low	Estimate	High
97.5%	100.0%	105.0%

Source: Original 5 Yr Plan Services Estimating sheet

Cost Parameters increases 1% (estimate ,high) for every neighborhood above 10 if the number of neighborhoods exceeds 10 in any given year..

Intersections

Base Case - 2014 YTD Information

Ramps installed through 08/14			806.0
2 ramps/installation (ie, corner)			1,612.0
Avg ramps/Intersection			7.6
Full intesections (8 ramps)			80%
Tee Intersections (6 ramps)			20%
Total Intersections			212.1
through	34	weeks	
Intersection per week			6.2
Avg Crews/week August			36.4
Avg intersections/week/crew			0.17

Productivity (Int/week)		
Low	Base	High
0.13	0.17	0.24

High / Low calculated based on 7 weeks of crew size information

Source: Restoration tracking spreadsheet, Weekly Report

Cost Parameters			
Low	Estimate	High	
98.8%	100.0%	102.5%	
75/25	80/20	90/10	**Full:Tee** Ratio
$88,400	$89,500	$91,700	

Estimated split of Contractor and PGL work

Provider	Mains	Services	Meters
Contractors	89%	84%	0%
PGL / Company	11%	16%	100%
Total	100%	100%	100%

From 2014 Liberty Audit, Data Request (DR) 224h. Based on dollars.

Installation crew make-up

Craft Labor (FTEs)	Mains	Services	Meters
Operating Engineers	1	1	0
Laborers	2	2	0
Pipefitters	7	7	0
Gas workers	0	0	2
Total Crew Size	10	10	2

Meters

PTD Information - 2013

Meter Location	Sub-Location	Dwelling Size	Meter Size	Productivity (days/meter) Facility Age >1981	40 - '80	<1940
Outside	N/A	N/A	Small	0.17	0.17	0.17
Outside	N/A	N/A	Medium	0.20	0.20	0.20
Outside	N/A	N/A	Large	0.25	0.25	0.25
Inside	Unfin Base	Single	Small	0.18	0.23	0.25
Inside	Unfin Base	Single	Medium	0.20	0.25	0.27
Inside	Unfin Base	Single	Large	0.25	0.32	0.33
Inside	Fin Base	Single	Small	0.36	0.45	0.50
Inside	Fin Base	Single	Medium	0.40	0.50	0.53
Inside	Fin Base	Single	Large	0.50	0.63	0.67
Inside	Other	Single	Small	2.00	2.50	2.63
Inside	Other	Single	Medium	2.00	2.50	2.63
Inside	Other	Single	Large	3.30	4.20	4.30
Inside	Unfin Base	Multi	Small	0.18	0.23	0.25
Inside	Unfin Base	Multi	Medium	0.20	0.25	0.27
Inside	Unfin Base	Multi	Large	0.25	0.32	0.33
Inside	Fin Base	Multi	Small	0.36	0.45	0.50
Inside	Fin Base	Multi	Medium	0.40	0.50	0.53
Inside	Fin Base	Multi	Large	0.50	0.63	0.67
Inside	Other	Multi	Small	2.00	2.50	2.63
Inside	Other	Multi	Medium	2.00	2.50	2.63
Inside	Other	Multi	Large	3.30	4.20	4.30

Cost/Schedule Parameters		
Low	Base	High
91.0%	100.0%	104.0%

Productivity estimated on PTD through 2013 based on mix of meters installed to achieve a 28 meter / day average.

DRAFT Rev A – Issued for internal review Nov 07, 2014

5 Year Plan (2016 – 2021) – Level II

SCHEDULE

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10 Year Plan (2016 – 2026) – Level II

SCHEDULE

DRAFT Rev A – Issued for internal review Nov 07, 2014

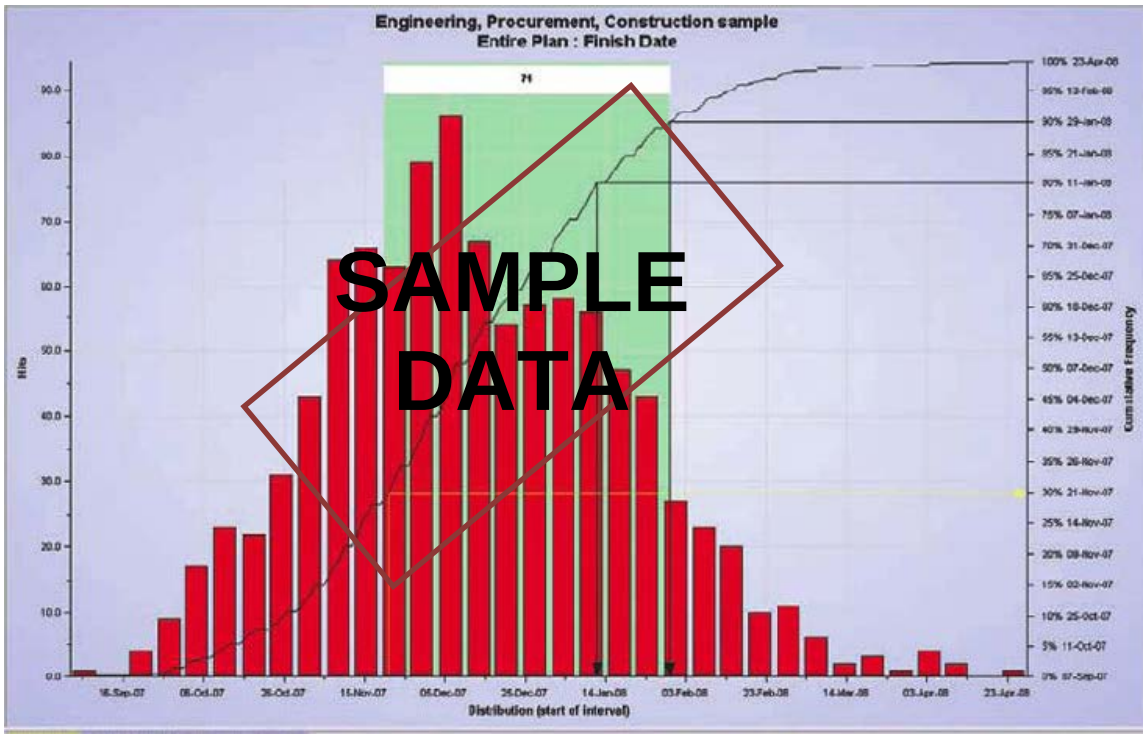
Total Program Schedule Level I

SCHEDULE

Probabilistic Analytics

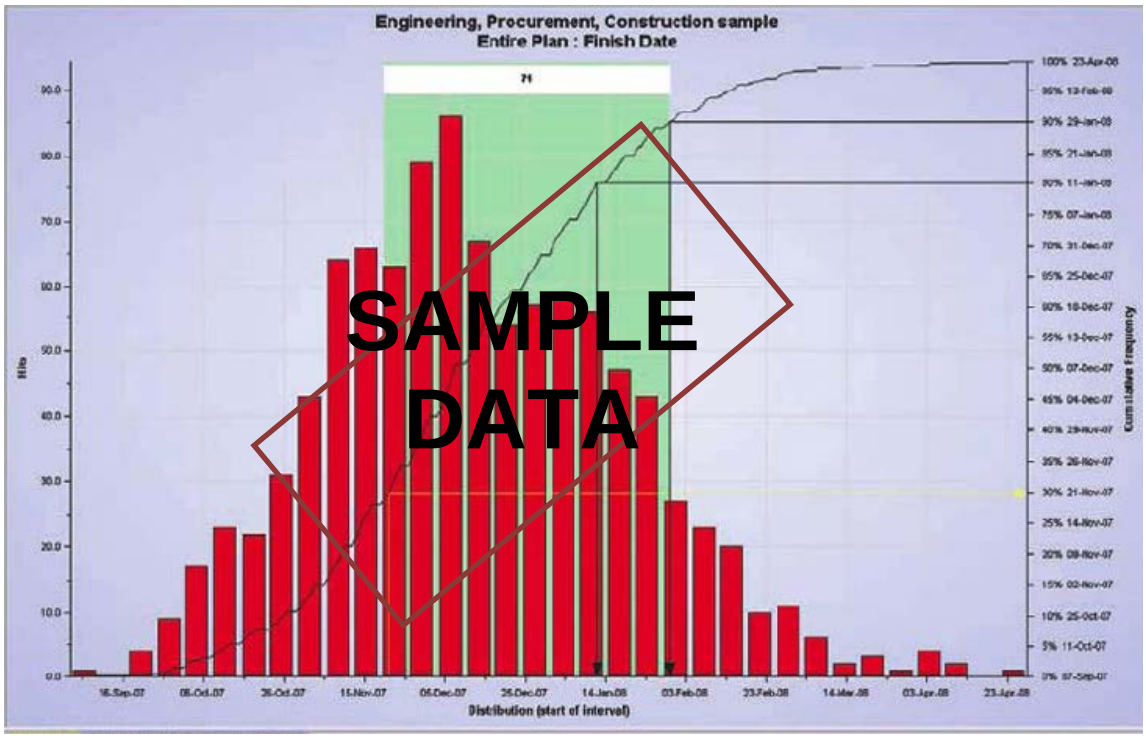
Schedule

Output will provide confidence levels for schedule completion and float. Results can drive budgets for required schedule contingency.



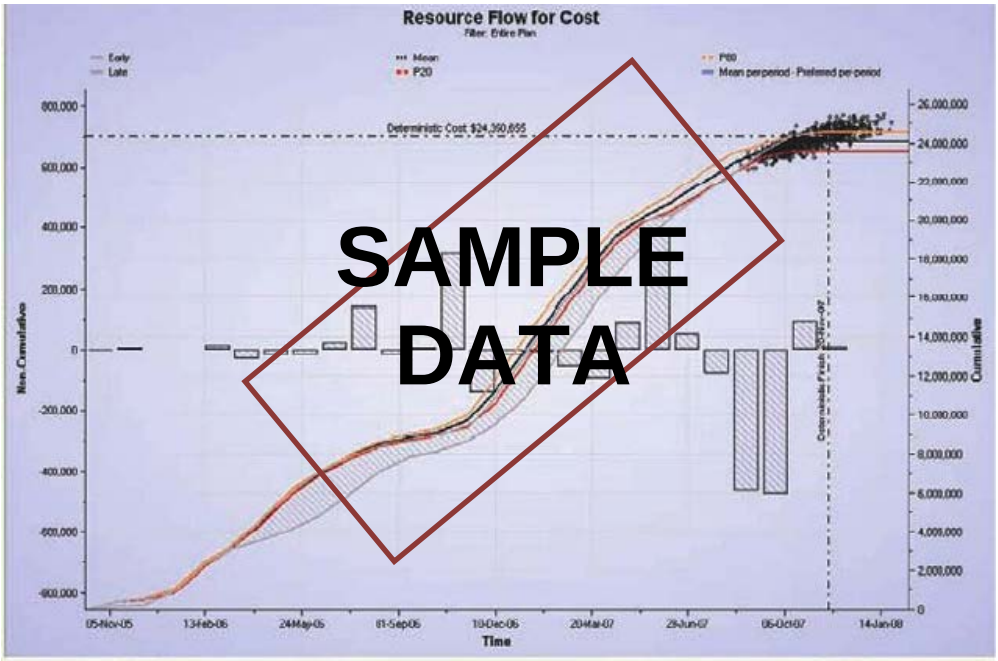
Cost

Output will provide confidence levels for program cost. Results can drive budgets for required cost contingency



Probabilistic Cash Flow

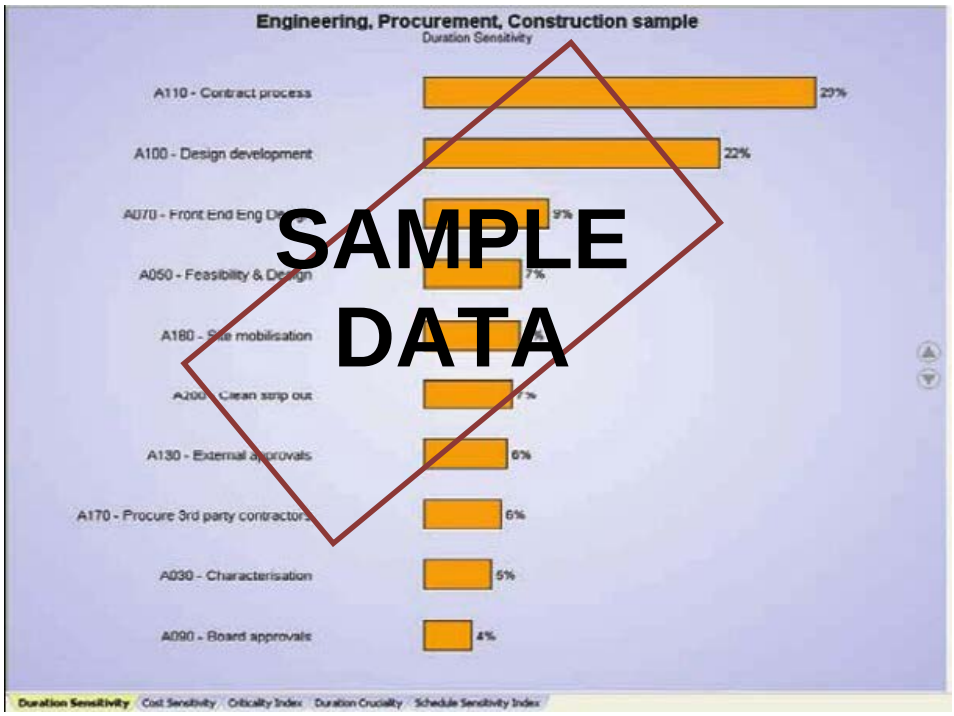
Based on probabilistic cost and schedule, long term cash flow (spend plan) developed and basis for EVM and baseline for YoY changes.



Period	Period Start	Cumulative P20	Cumulative P80	Cumulative Mean	Cumulative Preferred	Cumulative Early	Cumulative Late	Cumulative Actual (AC...	Cumulative Planned (B...	Cumulative Earned (BC...	Cumulative Estimated	Per-period P20	Per-period P80	Per-period Pre
1	12-Oct-05	$360,082	$304,375	$372,018	$375,000	$375,000	$135,000	-	$400,000	-	-	$360,082	$304,375	
2	12-Nov-05	$527,500	$547,500	$536,330	$535,000	$535,000	$235,000	-	$540,000	-	-	$141,429	$180,000	
3	12-Dec-05	$547,615	$1,050,665	$995,057	$995,061	$995,061	$995,061	-	$995,474	-	-	$995,488	$511,050	
4	12-Jan-06	$2,163,348	$2,414,441	$2,287,275	$2,283,131	$2,283,131	$2,283,131	-	$2,344,543	-	-	$1,339,114	$1,364,284	$
5	12-Feb-06	$3,156,490	$3,288,990	$3,223,114	$3,203,990	$3,203,990	$3,116,490	-	$3,221,490	-	-	$833,035	$1,043,901	
6	12-Mar-06	$4,373,619	$4,654,345	$4,514,724	$4,526,135	$4,526,135	$3,958,990	-	$4,592,969	-	-	$1,160,899	$1,457,586	$
7	12-Apr-06	$5,825,026	$6,108,149	$5,967,325	$5,996,251	$5,996,251	$4,368,313	-	$6,063,074	-	-	$1,439,485	$1,465,906	$

Cost and Schedule Drivers

Identify tasks or risks that have the greatest risk on the Program's cost and schedule performance.



Resource curve for driving trades (assuming 18007 gas workers right now).